# Meadow life

Wildflower meadows play an essential role in our ecosystem. To find out more **Chris Luck** talked to Professor Dave Goulson, who for 12 years has nurtured and studied a Charente flower meadow.



Over the last century (and particularly during the last 50 years) France, along with countries such as the UK, has lost some 80 to 90 per cent of its wild flower meadows. This shouldn't be confused with intensively managed or so-called 'improved pasture', which has little value to anything other than the animals it's grown to feed. This dramatic loss of habitat has played a major role in the decline of a vast range of insect species including what are now popularly termed 'pollinators', an extensive range of insects which between them provide the means by which most of our flowers and many of our crops are fertilised.

Apart from butterflies and bees, insects aren't generally at the top of people's considerations, unless they are a source of irritation or fear. Dave Goulson, however, considers them among the most fascinating creatures in the world. In his popular book 'A Buzz In The Meadow' he tells the story of how he bought a run-down farmhouse in Charente and turned its attached land into a meadow full of wildflowers, brimming with life. A biology professor at Sussex University in the UK, he studies bumblebees, which he regards as intellectual giants of the insect world. Sadly, they are in crisis, as are many of the planet's natural pollinators, and although reported issues with honey bees aren't really understood, there are enough commercial keepers to maintain populations. What we do know for a fact, based on research into their ecology and foraging preferences, is that one of the big drivers of the bumblebee decline has been the conversion of flower-rich grasslands (hay meadows, prairie, chalk downlands and so on) to flower-free farm monocultures. The fragments which remain are often degraded, polluted or simply too small to support viable populations.

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With this in mind, in 2003 he purchased Chez Nauche, deep in the heart of rural France, together with thirteen hectares of surrounding land. His aim was to create a wildlife sanctuary, a place where butterflies, dragonflies, voles and newts could thrive free from the pressures of modern agriculture. In particular he was keen to create a place for his beloved bumblebees, the creatures which he'd spent the past twenty years studying and attempting to conserve.

As anyone that has tried it will know, it isn't easy restoring floral diversity to arable land previously treated with fertilizers, since unnaturally high fertility promotes growth of coarse grasses which out-compete the flowers. Dave therefore enlisted the help of a local farmer, one M. Fontaneau, to cut and remove hay (which he feeds to his goats) each year, thus slowly sapping nutrients from the soil. As the grass weakened flowers started to creep back, regenerating from the seed-bank in the soil, others blown in on the wind or carried in the guts of birds. Dave has experimented with sowing his own mixes and using 'hemiparasitic' plants such as yellow rattle, which parasitise grasses. M. Fontaneau often stops by on the way to one of his fields to watch Dave and his graduate students on their spring and summer visits carefully marking out squares with string then stamping flower seeds in with their feet in what probably appears to be some sort of peculiar English fertility ritual.

CLOCKWISE FROM TOP LEFT: The delightfully named Hairy-Footed Flower Bee, *Anthophora Plumipes;* six-spot burnet, *Zygaena filipendulae;* Longhorn beetle, *Sticto-leptura cordigera;* Glanville fritillary, *Melitaea cinxia;* Stag beetles.

Hay meadows can take a huge time to really establish (perhaps 100 years of continuous management to achieve maturity) but in recent years he has counted in excess of 100 flower species overall. He nevertheless has a long way to go to rival an ancient hay meadow, where up to 30 species can be found in just one square metre. Most exciting is that in summer the meadow is now alive with insects. Each new plant species which arrives supports several new insect species: leaf miners which burrow in the leaves, aphids which suck the sap, predators which chomp down the aphids, pollinators to visit the flowers, tiny weevils which eat the seeds. He has dozens of species of butterflies, dragonflies, crickets, hoverflies, beetles and mantises, a seething, chirping, hopping, buzzing network of life which has returned all on its own. There are 16 species of bumblebee alone, including very rare examples such as the short-haired bumblebee, plus honeybees and more than 50 other bee species.

With almost as many species of butterflies in his meadow now as have been recorded in the whole of the British Isles, it's worth taking a look at one of them. On a steep south-facing slope at the southern end of his field ribwort plantain is common underfoot. This is an unspectacular little plant which many will recognise, with inconspicuous brown flowers from which dangle a fringe of yellow anthers and leaves which are the favoured food plant of the lovely Glanville fritillary. This butterfly is named after Lady Eleanor Glanville, one of the very few female lepidopterists of the 18th century and the first to describe this pretty species, which she found near her home in Lincolnshire. Glanville fritillaries have long since disappeared ▸

THIS PHOTO: Ribwort Plantain
RIGHT: Yellow Rattle

from most of the UK (they are now found only on the south coast of the Isle of Wight) but are among the most common butterflies at this time of year at Chez Nauche, where we disturb dozens from the grass as we walk. The caterpillars are unusual in that they are gregarious; the female lays large mounds of yellow eggs, which hatch into velvet-black caterpillars destined to live together on plantain in silken webs which they spin. Once they have consumed the plant on which they were laid they somehow agree that it's time to depart, and set off in a convoy to the next one.

In an ideal world at least ten per cent of our land would be managed this way, but with the best will in the world this isn't going to happen, as more and more land is either ploughed up or 'improved' for livestock, whether that be cattle, sheep or horses. However, the nice thing with bees and pollinators is that everyone can do something to help, especially those who have some land, although even if you have a tiny garden or just a window box you can plant a few bee-friendly flowers. Dave's university website has a long list which includes things like garden herbs which are also useful for cooking, like thyme, marjoram and rosemary. If you plant a few of them, even in the middle of a city, bees will turn up and start feeding. One of the bees' big problems today is that there just isn't enough food. If everyone around the world planted a few bee-friendly plants in their gardens the cumulative effect would be massive. The second thing he would urge is not to use pesticides in your garden. There's a big debate about pesticide use in farming, but neither he nor I think the same applies to their use in gardens. You don't need them. You can grow fruit, vegetables and flowers really well without blitzing them with pesticides. Don't buy them, don't spray them, and you'll be doing a little thing to help – once again, if everyone did a little thing it would become a big thing, and we could all feel good about it.

As Dave explains: "We often focus our conservation attention on large, charismatic animals: whales, pandas, tigers and the like. But our own survival is linked far more tightly to the fate of insects and their kin than to the last of the few large mammals, magnificent as they are."

*www.sussex.ac.uk/lifesci/goulsonlab/resources/flowers*

Foraging bumblebee

**Professor Dave Goulson was brought up in rural Shropshire, where he developed an early obsession with wildlife. He received his bachelor's degree in biology from Oxford University, followed by a doctorate on butterfly ecology at Oxford Brookes University. He lectured in biology for 11 years at the University of Southampton, and it was here that he began to study bumblebees in earnest. He subsequently moved to Stirling University in 2006, and then to Sussex in 2013. He has published more than 240 scientific articles on the ecology and conservation of bumblebees and other insects. He is the author of Bumblebees; Their Behaviour, Ecology and Conservation, published in 2010 by Oxford University Press, and of the Sunday Times bestseller A Sting in the Tale, a popular science book about bumble bees, published in 2013 by Jonathan Cape, and now translated into German, Dutch, Swedish, Korean, Chinese and Danish. This was followed by A Buzz in the Meadow in 2014. Goulson founded the Bumblebee Conservation Trust in 2006, a charity which has grown to 8,000 members. In 2015 he was named number 8 in BBC Wildlife Magazine's list of the top 50 most influential people in conservation.**


*Chris Luck runs two websites, www.wildlifeinfrance.com and www.planetepassion.eu, packed with information about animal and plant species in France, plus a blog about wildlife and bee-keeping in a natural, non-intrusive manner.*